

## The Premises of the American System of Manufactures

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**Abstract.** The aim of this paper is to demonstrate the nature of the American system of manufactures in a descriptive and critical manner, to analyze its entrenched paradigm, and then to uncover its rational inadequacy. In particular, the paper first describes the dominant model embodied in the American system in terms of job design, organizational structure, and organizational technology, and reveals its shortcomings through examining these components in terms of their generalizability and universality. Second, it analyzes the main features of sociological intellectual frameworks of thought in order to pinpoint the exact rational position of the American system of manufactures. It shows that the functionalist paradigm is an indelible intellectual attribute of the American model. Finally, the paper highlights the inadequacy of the American model to deal with the complex and multifarious problems of organizations. It should be noted that the Human Relations Movement, which is a significant property of the American system, will not be considered in this paper. The paper merely deals with the nature of the American system of manufactures in the early twentieth century.

**JEL Classification Codes:** D20, D29.

**Key Words:** American system of manufactures; assembly line; deskilling; functionalism; mass production; multidivisional form; paradigm.

### 1. Introduction

In the early twentieth century the American system of manufactures had limitations in terms of work process it designed, the kind of organizational structure it built up, and the type of technology it developed. The paper first seeks to reveal the basic features of the American system of manufactures, which gives direction to the generation of sophisticated appreciation of its intellectual position. Then, the paper aims at determining the rational insufficiency of the American model, which gives rise to a limited and inappropriate use of methods, tools, and techniques to tackle

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multidimensional organizational problems. This eventually leads to the inefficient and ineffective organizations.

There are three sections in this paper. The first section, called the main components of the American system of manufactures, describes separately the pioneering approaches that are related to the specific context of American Industrialization in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries to Organization Theory developed by Frederick Taylor, Alfred Sloan, and Henry Ford.

In particular, we first analyze the development of scientific management and Taylorism, its universality, and its problems, second the emergence of multidivisional organizational structure (M-Form) in the 1920s, its chief characteristics, and its problems, lastly the role of technology, its assumptions, and its problems.

The second section, called the intellectual property of the American system of manufactures, deals with a brief analysis of sociological paradigms and the chief characteristics of the functionalist paradigm, which was deeply rooted within the American model.

The third section, called the inadequacy of the American system of manufactures, determines the weaknesses of the American model within the rational dimension.

## **2. The Main Components of the American System of Manufactures**

In this section we look at three approaches that make up the American system of manufactures; the scientific management and Taylorism, the multidivisional organizational structure, and the Fordist system.

### *The Scientific Management and Taylorism*

In this subsection we consider the development of scientific management and Taylorism in the American context, the nature, the principles, and the assumptions of Taylorism, and the transferability of Taylorism.

According to Morgan (1997a), the American economy began to grow after the Civil War. The establishment of national market and mass transportation led to the development of mass production—organizational technology that uses conveyor belts and a standardized progressive assembly

process to manufacture goods (Jones, 2001). However, mass production required high levels of investment in plant and technology (Lazonick, 1991). Large-scale firms started to emerge rapidly in order to make use of these opportunities in the USA. Unfortunately, they had to cope with difficulties concerned with the workforce. As firms became bigger and management became more impersonal, workers unionized against management and owners merely paid attention to the efficiency considerations in production. As the American system began to change from small-scale production towards a mass production, an acrimonious conflict between employers and workers arose. Skilled workers defended their position by restricting their entry into unions and requiring high wages for their cooperation. Whereas unskilled workers who had less bargaining power participated into unions, which organized strikes to demand better conditions of employment (pay) and fairer working conditions. At the beginning of the 20th century American economy was experiencing a colossal expansion in production, but was facing industrial unrest and insufficient control of work process (Guillen, 1994).

In this context, Frederick Taylor was particularly concerned with the industrial unrest and the control of work process. He assumed that the control of skilled workers over tasks and technology should be removed. The skilled workers were powerful because their knowledge and skills were essential to the production process, the transmission of their knowledge and skills was their privilege through apprenticeship systems, skilled workers organized in unions which might harm firms easily, and they had power to organize larger groups of workers as 'gangs.' Therefore there was a need to restore the power back into the hands of management. Taylor scientifically studied the work process in order to increase productivity and efficiency, which would bring benefit to both sides. He aimed at planning the production system, in particular restructuring of the work process.

In this model the production system was deskilled or simplified; in other words, the required effort level to do the task was determined in advance and an appropriate reward structure was set in place. Taylor analyzed the components of work and broke them down into routine tasks, which did not require skill. In this way the highly skilled workforce was removed; the unskilled workers supervised by foreman replaced it. In this system the levels of productivity would be increased massively. The first step was to define what was required, second to divide the task up into smallest components, third to identify the appropriate sort of person to undertake the

task, and last to devise an appropriate set of incentives. In this way the requirements of the job design and work measurement were set out.

Taylor's scientific method tried to find the optimum pattern of performance for the routinized work. It increased the rate of surplus productivity through greater effectiveness in production and increased pay for workers. The philosophy was 'a fair day's pay for a fair day's work' (workers are paid according to their productivity) (Koontz and Wehrich, 1994). This inevitably gave workers motivation for high performance. Furthermore, Taylor believed that workers should be chosen discreetly and trained. His popular five principles (Morgan, 1997b), which emphasized using science, creating group harmony and cooperation, achieving maximum output, and developing workers, are listed below.

- 'Shift' all responsibility for the organization of work from the worker to the manager. While planning and design of work belongs to manager, the implementation is the duty of workers.
- 'Use scientific methods' in order to discover the most effective and accurate way of doing the job (organized knowledge).
- 'Select' the person who performs the job in a most efficient manner (achieving collaboration of human beings rather than 'chaotic individualism').
- 'Train' the workers to do their job productively (developing workers to the fullest extent).
- 'Monitor' the worker performance in order to ensure that correct and relevant work methods are followed and results are achieved

The chief characteristic of Taylorism was to plan the production process to allocate labor according to the requirements of the production process. However, the fragmentation of tasks and the required skill is a problematic issue. It depends on three assumptions about production (Morgan, 1997a).

First, Taylorist system does not allow unskilled workers to use their 'tacit skills' that develop within the production process through learning and experience and give chance to the workforce to deal with problems as they arise if the system breaks down. Rather than being directly involved in the production system, the new skilled workers as maintenance crew or quality

inspectors are used. This gives rise to an increase in the overheads of the company.

Second, Taylorist system has a difficulty to operate in rapidly changing mass markets, which require high quality and distinctive products. It is successful in markets where firms produce a limited range of products.

Third, Taylorist system assumes that it is natural for workers to put in to the work task as little effort as they possibly could—‘soldiering’. Therefore the management had to determine the required level of effort for any particular task and then monitor performance. In this respect Taylor did not see the way in which the effort bargain was determined by beliefs about work as an essential form of self-expression and personal identity. He also did not perceive those values and norms about social collectivities and the role of hierarchy, obedience, and legitimacy could differ. Therefore in societies with long traditions of hierarchical and feudal authority, such as Germany and Japan, there has been more value consensus between managers and workers about acceptable levels of effort. In these contexts, the assumption that skill is a weapon to be used against the employer is inaccurate (Lane, 1989).

When we look at the transferability of the scientific management to other countries, we encounter some difficulties. Countries, which have experienced industrialization later than USA and sustained a larger small firm sector, tended to be more resistant to Taylorist techniques.

According to Guillen (1994), in Europe where closer relations between managers and workers characterized firms there was a great emphasis on cooperation rather than conflict. This made the firm to focus on producing high quality and differentiated products into the smaller segments of the market. Furthermore, European countries that had strong regional identities and language barriers limited the development of a common market. Guillen also noted there was a paternalistic relationship between the employer and the employee involving the provision of social support such as housing, education, and other forms of welfare. Another barrier was concerned with the hegemony and the power of skilled workers in small firms, which were flexible, producing a wide range of goods in many sectors (innovative), and quality conscious. Small firms also relied on the skill and craft of workers who were regarded as an essential part in the development of high quality products. In addition, the European countries experienced the slow emergence of mass markets.

### *The Multidivisional Organizational Structure*

In this section we consider the development of multidivisional structure (M-form) in the USA, its basic characteristics, and the diffusion of the M-form.

According to Chandler (1990), as firms became bigger in the USA, the complexities of managing them became greater. A particular response developed in the American context, which involved in finding a structure to enable growth through diversification. The structure was the multidivisional form that was particularly associated with Alfred Sloan of General Motors.

In the USA, there were some conditions such as a trend towards cultural homogeneity, a secular education system, the growing system of mass retailing, the growing power of advertising, and a national media of communication, which provided the ideal environment for mass production and mass consumption. The establishment of mass marketing encouraged firms expands their activities. However the vast geographical distances and local discrepancies in taste and expectation undermined the firms' performance and created the problems of coordination. Firms pursued two strategies. First, they wanted to get rid of rivals and competitors by buying them out or denying them to access to key resources—a form of horizontal coordination. Second, they wanted to buy up activities such as raw material resources—vertical integration.

All these activities required large amounts of capital, which could not be created by the firm itself. As a result, the financiers became increasingly involved in such processes. In this way firms started to grow rapidly and to become highly diversified across markets.

In order to coordinate their differentiated activities firms first moved towards a functional structure in which support functions such as operations, accounting, marketing, and sales are all differentiated, and more complex specific departments were set up to deal with each function (Jones, 2001). When the market was stable and the number of products was limited, the functional structure allowed a degree of specialization within the overall system of coordination. However, as products, markets, technologies, etc. became more uncertain, the functional system reached overload. Senior managers could not make all vital decisions and junior managers were too slow to be responsive to market changes. Firms became holding companies in which separate companies operate in different lines of production activity,

but with each company subject to varying degrees of centralized control by the parent company. Such a structure was not an efficient model for managing diverse businesses. However, they operated successfully where they could buy up most of their potential competitors and used a price and market fixing agreement (Fligstein, 1990). In other words, the power to dominate the market became significant. In the meantime, as a consequence of political controversy the United States legislation outlawed such cartels in the first two decades of the 20<sup>th</sup> century. This meant that firms had to gain market share not through cartels, but through winning competitively against other firms. This reinforced the tendency towards mass consumption because firms searched for giving themselves a brand image through mass marketing. They were also obliged to give a considerable emphasis on the efficiency of the internal structure of the firm, as the price became a key factor in the competition (Fligstein, 1990).

These tendencies brought about the adaptation of the more rationalized form of holding company model. Alfred Sloan, a senior manager in the General Motors (GM), pioneered the new type of organizational structure, called multidivisional structure (M-form).

The problem with Sloan was to compete with Ford Motor Company, in terms of not only product but also in financial performance. Sloan aimed at closing several small operations of GM and concentrating production in a few locations where the company could enjoy the benefits of fewer models and cost saving from economies of scale. According to Jones (2001), Sloan recognized the significance of presence of diverse sets of research, development, marketing, and competencies in the small car companies, possibility of losing this diversity of talent if he combined all the skills into one centrally located research and development department, possibility of a danger of resemblance of all GM cars if the same set of support functions worked for the all of GM divisions, and advantages of centralized control in achieving economies of scale.

On the basis of these factors Sloan needed to find out a principle for coordination without losing the advantages of decentralization. He noted that each of GM's different businesses was placed in a self-contained operating division with support functions (i.e., production, engineering, finance, and sales). Each division became a profit center and was evaluated on its return on investment. The division's performance became visible; the morale of the whole organization increased through placing each operation on its foundation and giving responsibility to each unit, a true measure of

efficiency was achieved. This enabled the corporation to direct the placing of additional capital correctly to the unit where the company as a whole gains the greatest benefit.

The essence of the multidivisional organizational structure emphasizes the following. Managing complex and diverse value creation activities requires an M-form structure in which support functions are placed in autonomous self-contained divisions. Divisions are free to set support functions and control their value creation activities (increased horizontal differentiation). M-form also creates a new level of management, a corporate headquarters staff (CHS) composed of corporate managers who are responsible for overseeing the activities of divisions (increased vertical differentiation). In M-form there are three levels of management; corporate, divisional, and functional. Divisional managers link CHS and the divisions. There is also a basic separation between strategic and operational issues. Strategic issues concerning the long-term direction of the business were the responsibility of the CHS, which treats the firm as a financial system and gives units financial targets over varying lengths of time. Within these financial parameters, units are free to develop their own business, to introduce model change in operations, and to grow their market (operational issues). Divisional managers meet with the top management for the major investment proposals.

In general, this organizational structure diversifies and spreads risks to ensure that the organization is not dependent on one sector or market, and enables firm to grow rapidly by taking over other companies or entering new markets, and integrating them into the structure as another division. According to Jones (2001), strengths and weaknesses of M-form structure can be listed below.

#### Strengths of Multidivisional Structure:

- **Increased Organizational Effectiveness:** In a multidivisional structure divisional managers are responsible for the day-to-day operations of their respective divisions and for tailoring divisional activities to the needs of customers. Corporate managers are responsible for the long-term planning for the corporation as a whole and for tailoring the mission of the divisions to match the goals of the whole organization.

- **Increased Control:** Corporate managers monitor the performance of divisional managers.
- **Profitable Growth:** When each division is its own profit center corporate headquarters can identify the divisions in which an investment of funds can be made.
- **Internal Labor Market:** The most able divisional managers are promoted to become corporate managers.

#### Weaknesses of Multidivisional Structure:

- **Managing the Corporate-Divisional Relationship:** On the one hand, each division is closest to its particular operating environment and is in the best position to develop plans and objectives to increase its own effectiveness, so decentralization is a logical choice. On the other hand, headquarters' role is to adopt the long-term view and to tailor divisional activities to the needs of the whole organization, so centralization has advantages, too. The balance between the two has to be managed all the time.
- **Coordination Problems between Divisions:** Divisions may begin to compete for resources, and the rivalry may prevent them from cooperating with each other.
- **Transfer Pricing:** Problems between divisions often revolve around the transfer price—the price at which one division sells a product or information about innovations to another division.
- **Bureaucratic Costs:** Each division has a full complement of support functions, including research and development. Thus, there is extensive duplication of activities within the organization.
- **Communication Problems:** Tall hierarchies tend to have communication problems, particularly the distortion of information. These problems are common in multidivisional structures because they tend to be the tallest of all the structures that organizations use.

When we look at the transferability of the multidivisional organizational structure to other countries, we encounter some difficulties.

According to Chandler and Daems (1980), the M-form was gradually developing in most European countries in the early 1970s. The delay was related to 'cultural lags' which included low levels of management education, understanding of the advantages of the M-form, and later developments of a mass market in these countries. In a recent research, Whitely and Kristensen (1996) showed that the holding company form existed in France where entrepreneurs and families use them as ways of building coalitions of power and influence. In the French context, the holding companies are characterized by systems of interlocking share ownership, which make them strong against the capital markets.

More significant is the pattern of growth and finance that characterizes Japan and Germany. In both countries banks own the significant portions of the shares of companies. The ownership relation is traditionally long term and bank supports growth and development as an organic process rather than through acquisition. This in turn reflects a strong commitment at all levels of the firm to a particular set of core competences. These competences derive from long experience at both individual and organizational level in particular industries, sectors, and markets. It is therefore unusual in either Germany or Japan to see growth through acquisition. If it does occur, it will be an acquisition closely aligned to existing businesses rather than an unrelated diversification. Japanese and German firms tend to remain more concentrated and focused than their American counterparts. When new developments emerge, new companies are created and given the autonomy to develop though they remain linked in various formal and informal ways with the original organization (Morgan, 1997a). For instance, in Japan interlocks and interdependencies between companies within family structures and banks are known as 'keiretsu'. Each company remains focused on its own key task rather than having its energy and attention spread.

### *The Fordist System*

In the American System of manufactures the third key component is how to use and develop technology in order to increase production, achieve economies of scale, cheapen the price of goods, and gain increased market share and profits. The assembly line as the technological driving force was created by Henry Ford and associated with his name. Fordism is called 'Taylorism+assembly line' (Morgan, 1997a).

Before Ford, car production was made through the old principles of carriage building based on a craft process. On the factory floor each carriage was built up at a single point, and parts had to be delivered to this point from the stores. This system encouraged specialization in which parts of the process were done at particular points in the factory and then semi-completed carriage was taken to the next stage of production. Components were brought from specialized producers and inventory levels were high to guarantee the continuity of production.

According to Williams et al. (1994) Ford developed a series of breakthroughs in technology, process, and work organisation, which enabled the company to increase its productivity and move into mass production of cars. Ford's innovations in the production of cars can be summarized as follows.

Production of cars was made through moving continuously around the factory on an assembly line. Each point along the line is accountable to just a single, relatively simple task. In this way each worker was assigned a point on the line where he performed a very specific task. The speed of the task at the point, which had to be done, is determined by the speed at which the assembly line passed by the worker. In the Taylorist system, control and surveillance still had to be managed by the foremen, but under Fordism, the assembly line was in itself disciplinary and a control mechanism (Lazonick, 1991).

Fordist system created the semi-skilled worker (somebody who had no skill in the traditional sense but had learned how to cope with the assembly line through observation) and undermined the position of skilled worker. Here the consequence was to create another category of skilled workers who acted to maintain the line and machinery. These workers were able to exercise a high level of strategic power, since without their cooperation; the assembly line could not be maintained (Morgan, 1997a). Furthermore, Fordism reduced the number of bought-in components that enabled greater flexibility and lowered stock inventories.

These innovations brought about massive increase in productivity in car manufacturing. Ford Motor Company in 1909 produced 14,000 Model T Cars; in 1916 the figure was 506,000. In order to satisfy mass consumption prices were reduced from \$850 in 1909 to \$360 in 1916. At the same time, profit as a percentage of the car price also rose from 25.7 per cent to 31.4 per cent (Jones, 2001).

Besides these developments, Ford also emphasized that mass production required a system of mass consumption. In other words, in the market there had to be people who have willingness and ability to buy cars. Therefore holding wages and salaries down was acting against the creation of a mass market. This necessitated the fact that the market for cars needed to be mobilized. Ford did this in two ways. First, he increased the wages of his own workers as a way of encouraging them to purchase the cars they were producing. Second, he set up credit arrangements for the purchase of cars, enabling people to spread the price of buying over a number of years. 'Buy now, pay later' slogan contributed to the development of a consumer society.

However, the emergence of assembly line led to some negative impacts on the worker. The simple tasks, the relentless speed and noise of the line, the boredom, and fatigue, all became the attributes of the factory life. Marxists and radical sociologists called this process as 'deskilling' and 'proletarianisation.' People who worked on the assembly line shared the same conditions of work; there were no status distinctions. The only weapon against the employer and the line was their potential for unity. In the USA and the UK an alienated workforce from the work task emerged. They hated their job; developed games and other activities such as industrial sabotage, in the sense of deliberately doing things wrong in order to pass the time. They were bound in to the system through a cash link and nothing else. They had no praise and recognition with what they were producing and found relief and fulfillment outside the work. They faced employers and managers battled with them over conditions of employment (pay) and conditions of work. This was a 'win-lose' battle (Pondy, 1967). Within this conflict workers desired higher wages and job security while employers would certainly resist. Occasionally, strikes and other forms of industrial conflict occurred. Within the negotiation processes wages were related to the speed of work and the effort, which the workers had to put in. Negotiation issues were concerned with the speed of the line and manning—providing sufficient men for operation.

In the meantime, the firms operating in the Fordist system became vulnerable to firms based on different principles (Morgan, 1997a).

First, they were vulnerable to car companies whose workers earn lower wages. This challenge came from car manufacturers in Japan, South Korea, and Malaysia.

Second, they were vulnerable to car companies whose products have higher quality. The high quality and high value cars required a modification of mass production technology. Germans achieved this with Mercedes and BMW. The American and British firms separated the worker and the product. This meant that quality inspection was separate from the line itself. The outcome of this process is that faults were either not detected or highly expensive to rectify, as the entire car had to be sent back for repair. If quality were improved by making it a line responsibility, then the final product would be cheaper and had a better reputation.

Finally, the Fordist assembly line system was inflexible both as a technology and as a system of work relations. There was no room for changes in the system. Important model changes required long development times and intricate negotiations with the workforce about the implications of these changes for pay and effort bargain. As long as the market was satisfied with a limited range of choice and extended periods between model changes, this was all right. However if the market requires more flexibility from producers, the Fordist system was under a menace.

Furthermore, in terms of design of technology Fordist system cheapened the production by reducing the skilled content of work and speeding up the output. For example, Noble (1986) in his book *Forces of Production* analyzes the development of computer-driven machine tools in the USA and highlights that designers aim to reduce the amount of skill necessary to use the machine. According to Noble, designers of the process believed that the power of skilled workers would be increased if designers do not take action. This possibility of increasing power of skilled workers in organizational life should be eliminated since it has been a weapon for workers to extract higher wages and other benefits from managers. In effect, they designed machine tools, which could be operated by anybody in order to achieve their goal of marginalizing skilled workers. This was a conscious desired purpose of the powerful about how technology would match to the existing production system.

If we look at different European countries we come across to different technologies. In Germany, technology is tolerant that leaves a high level of discretion and autonomy for the operator, and the skilled worker is considered as an essential and accepted component of the production system. German workers are traditionally highly skilled and cooperative with management. Wages are annually debated and the issue of 'frontier of control' is not a managerial right. This derives from the acceptance of the

technical leadership of management within the overall system in which everyone claims some technical expertise. In turn technology develops not as a means of destroying existing expertise but of expanding and developing it. Therefore dynamism in technological development in Germany increases skill and improves quality and quantity of product. By contrast, in France and in the UK the status of skill is much lower and more directly embedded in workers' organizations as a means of defense against management; technology is developed and introduced so as to minimize operator input to the process (Morgan, 1997a).

These processes are closely tied to how firms develop their markets. On the one hand, if markets are stable and based on price competition, they are primarily driven by mass production and the need to achieve economies of scale—cost savings that result when goods and services are produced in large volume on automated production lines. On the other hand, if markets are differentiated and dynamic, economies of scale should be supplemented by the economies of scope—cost savings that result when an organization is able to use underutilized resources more effectively because they can be shared across different products and tasks, i.e., how quickly and cheaply production can switch or expand into new areas (Jones, 2001).

USA went far too long in mass production than any other country because mass production penetrated more sectors of economy in the USA than in any other country. Mass retailing was set up far earlier than elsewhere, leading to standardization of food products that continues to be resisted in many countries. Ritzer (1991) called this 'MacDonaldisation' of American society. In most other countries, markets were smaller and more differentiated. Thus, companies aimed at retaining flexibility, high quality production, and high skills that enabled them to achieve economies of scale and scope at the same time.

### **3. The Intellectual Property of the American System of Manufactures**

In this section our aim is to demonstrate the nature of the paradigm upon which the American model is based. However before starting to this argument it would be helpful for the reader to make clear the meaning of the concept called paradigm.

In the analysis of the progress of science Thomas Kuhn (1970) highlighted the diversity of modes of thought and action that emphasizes the

radically different understandings of the world. He pointed out that... 'the proponents of competing paradigms practice their trades in different worlds...the two groups of scientists see different things when they look from the same point in the same direction.' These different ways of thinking and seeing constituted fundamentally different paradigms, theoretically nonneutral and ideologically value-laden intellectual frameworks of thought (Flood, 1990) or sets of ideas, beliefs, and assumptions that direct the scientific activity of a scientific community (Jackson, 1991).

Gibson Burrell and Gareth Morgan's *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life* best presents the paradigm analysis in the organizational and industrial sociology literature. This work will help us pinpoint the exact position of American model within the organization theory.

Burrell and Morgan (1979, 2001) within this book revealed the idea that all theories of organization are based upon a 'philosophy of science' and a 'theory of society'. They argued that theories about the organization and the social world can be conceived in terms of four key paradigms, according to the assumptions these theories make about the 'nature of social science' and about the 'nature of society'. Assumptions about the nature of social science can be seen as either 'objective' or 'subjective' in kind. If a theory is underpinned by objective assumptions about the nature of social science, it will have following characteristics.

- Social reality will be perceived as having a hard, objective existence, external to the individual (i. e., the theory adheres to a realist ontology): whether the reality is of an objective nature, or the product of individual consciousness.
- The theory will seek to establish the existence of regularities and causal relationships in the social world (positivist epistemology): the way one understands the world and communicates this as knowledge to other human beings. The emphasis is given to the forms of knowledge.
- Human behavior will be seen as being determined by external circumstances (determinist): the emphasis is on the relationship between the human being and the external environment.
- Scientific tests and quantitative analyses will be preferred techniques for acquiring knowledge (nomothetic

methodology): emphasis is on the way to investigate and obtain knowledge about the social world.

If a theory is underpinned by subjective assumptions about the nature of social science, it will have following characteristics.

- Social reality will be perceived as having a more subjective existence as the product of individual or shared consciousness (nominalist ontology).
- The social theory will seek knowledge by attempting to understand the perspectives of people involved in creating social reality (anti-positivist epistemology).
- Human beings will be seen to possess free will (voluntarist).
- Getting as close as possible to the subject under investigation, in order to acquire knowledge (ideographic methodology).

Assumptions about the nature of society can be seen as emphasizing either 'regulation' or 'radical change.'

Regulation is an outcome of the nature of social order and equilibrium (Dahrendorf, 1967). According to Dahrendorf, the integration or order theory of society, as displayed by the work of Talcott Parsons (1956, 1957) and other structural-functionalists, is founded upon a number of assumptions of following type: The sociology of regulation concerns itself with understanding the status quo. Society is seen as being basically consensual and the mechanisms by which social order is maintained are studied.

- Every society is a relatively persistent, stable structure of elements (stability).
- Every society is a well-integrated structure of elements (integration).
- Every element in a society has a function, i.e., renders a contribution to its maintenance as a system (functional coordination).
- Every functioning social structure is based on a consensus of values among its members (consensus).

Radical change is an outcome of conflict or coercion in social structures. According to Dahrendorf conflict or coercion theory of society can also be reduced to a small number of basic tenets: The sociology of radical change concerns itself with finding explanations for radical change in social systems. Society is seen as being riven by contradictions and structural conflict. Some groups in society benefit at the expense of others; any cohesion that exists is achieved by the domination of some groups over others.

- Every society is at a vary point subject to processes of change; social change is ubiquitous (change).
- Every society displays at every point dissensus and conflict; social conflict is ubiquitous (conflict).
- Every element in a society renders a contribution to its disintegration and change (disintegration).
- Every society is based on the coercion of some of its members by others (coercion).

If we now combine the objective-subjective and regulation-radical change dimensions, we can produce a matrix defining the four key sociological paradigms. These sociological paradigms are labeled functionalist, interpretive, radical structuralist, and radical humanist as indicated in Figure 1.

On the one hand, the sociology of regulation is concerned with status quo, social order, consensus, social integration and cohesion, solidarity, need satisfaction, and actuality. On the other hand, the sociology of radical change is concerned with radical change, structural conflict, modes of domination, contradiction, emancipation, deprivation, and potentiality.

According to Jackson (1991, 2000) if we view organizations from within the functionalist paradigm (objective and sociology of regulation)

- They seem to have a hard, easily identifiable existence independent of us as observers.
- We understand the workings of such systems if we can find regularities in the relationships between subsystems and the whole.
- The human beings in the system present no more problems than do other component parts.

- It is possible to construct a quantitative model of the system.
- The purpose of studying such systems is to understand the status quo better; this facilitates the prediction and control of the system.

If we view organizations from within the interpretive paradigm (subjective and sociology of regulation)

- They seem to be 'softer' to elude easy identification and to possess a precarious existence only as the creative constructions of human beings.
- We can understand such systems only by trying to understand the points of view and the intentions of the human beings who construct them.
- We must acquire detailed information about it by getting involved in its activities 'getting inside'.
- The purpose of studying such systems is to understand the status quo better so that prediction and control are facilitated.

If we view organizations from within the radical structuralist paradigm (objective, radical change)

- They seem to have hard existence, external to us.
- We can discover causal regularities governing their behavior
- Human intentions are neglected.
- It is possible to develop a quantitative model of the system.
- The purpose of studying such systems is to understand radical change.
- Emphasis is based upon contradictions in the system and conflict between different groups in the system.
- This facilitates the emancipation of people from existing social structures.

If we view systems from within the radical humanist paradigm (subjective, radical change)

- They seem to be creative constructions of human beings.
- Analyzing such systems deepens upon understanding intentions of the human beings who construct them.

- The ability of people to transform the system they created will be apparent.
- The way to learn about these systems is to involve ourselves in their activities.
- Emphasis is based upon gaining understanding of the current social arrangements that are seen as constraining human development.
- This facilitates emancipation of people from existing social structures.

Morgan (1997a) argued that organization theory literature was dominated and shaped by the American system for a long time, which was deeply based upon the functionalist paradigm. They identified the fundamental continuity between Taylorism and later developments such as human relations, socio-technical systems, contingency theory, and the quality of working life movement. Even though these continuities can be analyzed in terms of the underlying assumptions about social sciences and change, they reflect one particular construction or functionalist paradigm of organization theory. Burrell and Morgan highlighted the other alternative ways to look at organization theory.

The most important finding in their work was to encourage the future researchers to work within the alternative perspectives—interpretivist, radical humanist, and radical structuralist paradigms in order to develop methods, techniques, and tools, and to challenge the dominant paradigm—functionalist. Furthermore they argued that ‘paradigm isolationism’ should be preserved rather than mixing together insights or theories from different paradigms. In this way the researcher will be able to analyze and explore theories, techniques, methods, and tools more deeply under the meta-characteristics of a particular rationality or paradigm. In other words, theories based on certain sociological/philosophical assumptions in organization theory make reference to particular paradigm such as social system theory (scientific management, human relations theory, socio-technical systems theory, theories of equilibrium, structural-functionalist approaches, open systems theory, and contingency theory), theories of bureaucracy, and pluralist theory make reference to the functionalist paradigm.

Likewise, ethnomethodological approaches that analyze taken-for-granted assumptions concerned with the ordered nature of social world,

phenomenological approaches that inspect individual's consciousness and intentionality through 'bracketing' wider and external consequences, hermeneutics that recognize and interpret human expressions which contain a meaningful component into one's own system of values and meanings, which all make reference to the interpretivist paradigm.

Furthermore critical theory, for example, makes reference to the radical humanist rationality. Critical theory basically concentrates on the following issues:

- Understanding the society in its entirety; all elements of its totality
- Understanding consciousness that is internally generated but is influenced by the process of objectification and the dialectic between subjective and objective worlds
- Considering human creations or objectified social external world; products of human consciousness as a dominating reality that divorces man from his true self or alienates him

The most influential studies within the critical theory are Lukácsian sociology—emphasizing 'reification' (independent and objectified social world as a creation of human consciousness constrains and alienates man), Gramsci's sociology—emphasizing 'ideological hegemony' (reflecting a belief system among the proletariat fostered by the ruling class that stresses the importance of order, authority and discipline, and propagated through institutions such as family, school, and workplace), Marcuse's 'one-dimensional man' (emphasizing the alienating role of purposive rationality—technology, science, and logic within the advanced industrialized society, and this supplements other forces namely excessive repression of libido and the maintenance of a happy workforce through the creation of affluence and false needs), and Habermas' theory of communicative competence (emphasizing the role of language that is an alienating force in all aspects of social life through communicative distortion).

Likewise, conflict theory and Marx's historical materialism make reference to radical structuralist paradigm. These approaches mutually support the following attributes:

- Understanding total social formations—totality
- Understanding configurations of social relationships which characterize different totalities and which exist independently of men's consciousness
- Understanding structures which are seen as posed in contradictory and antagonistic relationships one to another
- Understanding crisis as a process of economic or political transformation from one totality to another

Up to 1970s the American model that is based on the functionalist paradigm emphasized a systemic modernism (Lyotard, 1984) in which an operating system is programmed to achieve effective performance in terms of input-output measures and handling environmental uncertainty. Individual hopes and preferences merely respond to the organization's needs and consensus is engineered to improve the system's functioning.

#### **4. Inadequacy of the American System of Manufactures**

The above argument discloses the fact that paradigms are incommensurable; each of them supports radically different epistemological/ philosophical/ sociological assumptions. Managers and consultants in organizations always develop paradigm subcultures or tackle complex problems through their specialized expertise, particular past experience, and methodological preference. In other words, most of the analysts have been specialized within the functionalist rationality due to the dominance of the American system for a long time and have employed its methods and techniques whatever problem they have confronted. The practitioners should be aware of the fact that the traditional functionalist rationality that is the chief intellectual attribute of the American model has limitations; therefore researchers should consider other disciplines and their associated methods, tools, and techniques for alternative ways of looking at organizations. As Brocklesby (1997) argued, the analysts should question their favorite paradigm's distinctions, commit themselves to a new paradigm that fits their personality and political predilections, learn about their paradigm's prepositional and experiential knowledge, and move easily among paradigms.

The fragmented nature of management science in which the argument of paradigm incommensurability comes to the fore was well discussed within the studies of Dando and Bennett (1981). In the light of Kuhn's (1970) incommensurability thesis that stresses that there is no common measurement standard for comparing the fundamentally different paradigms,

Dando and Bennett argued that the dominant paradigm or conventional functionalist approach which was popular in 1950s and 1960s improved in sophistication and was unchallenged in 'normal science.' It emphasized that objectives and problems are assumed to be 'given.' The system is represented in a mathematical model which aims to achieve an 'optimal' solution which is tested in the real world. This methodology, called Operational Research (OR), was successful in allocation, inventory, replacement, queuing, sequencing, routing, etc., and was widely employed almost in each problematic context of organizational life in the United States.

Operational Research was defined as

The application of the methods of science to complex problems arising in the direction and management of large systems of men, machines, materials, and money in industry, business, government, and defense. The distinctive approach is to develop a scientific model of the system incorporating measurements of factors such as chance and risk, with which to predict and compare outcomes of alternative decisions, strategies or controls. The purpose is to help management determine its policy and actions scientifically (Jackson, 1991, p.77).

Its process included the following steps:

- Formulating the problem or defining objectives
- Constructing a mathematical model to represent the system
- Deriving a solution from the model
- Testing the model and deriving a solution from it
- Setting up controls over the solution
- Putting the solution to work

According to Jackson (2000), such a methodology has several shortcomings.

First, it has a very limited domain of applicability: Ends are clearly specified and attention is concentrated on means. However problems can be defined differently reflecting each part's view, value, and interests. This gives rise to possible accounts of objectives of a particular system, which are in conflict.

Second, it treats human component of the system to be engineered just like other mechanical parts of the system.

Third, it puts high emphasis on 'quantification' and 'sub-optimization': Building of a quantitative model of the system of concern is highly selective process and reflects biases and limitations of vision of its creators. This brings about concealment of other assumptions of the problem. Furthermore, some factors might not be amenable to quantification.

Fourth, it privileges one objective or set of objectives of powerful stakeholders: It eliminates differences in opinion and interests and contribution of ordinary people to decision making, thus encourages 'depoliticization' and 'scientization' (Rosenhead, 1981).

Fifth, it assumes that operating systems are seen as anything governed by predictable laws.

In the 1970s, however, Operational Research or the traditional approach failed to deal with 'soft' issues that comprise social and behavioral components. Jackson (1987) and Keys (1987) underlined the insufficiency of conventional approach to cope with the extreme complexity and multiple perceptions of reality. Dando and Bennett (1981) also stressed that OR gave rise to an uncertainty because of its failure to tackle ill-structured issues. They stated that a crisis was inevitable in which the dominant paradigm or the traditional functionalist approach could not cope with 'anomalies' such as strategic and complex issues that consist of social and behavioral elements. The failure of OR generated a revolution or the birth of alternative paradigms, 'extraordinary science' (Kuhn, 1970) that challenged the functionalist approach.

Dando and Bennett (1981) undertook a research in the identification of these competing paradigms and determined three conflicting approaches: 'official' (which corresponds to positivist science that emphasizes regulation and control and use of methods of natural sciences in the social sciences), 'reformist' (which is related to interpretive social science that stresses undistorted communication and genuine consensus), and 'revolutionary' (which is concerned with critical social science that emphasizes domination, exploitation, conflict, and human emancipation).

In the American model there is always a definition of objectives, a scientific model of the system that is tested and controlled, and then

transformed into an operating procedure. In other words, according to Checkland (1978, 1981), there is a desired state— $S_1$  and a present state— $S_0$  of the system of concern. There are also alternative ways of getting from  $S_0$  to  $S_1$  in which the practitioner should find out the best means.

Furthermore, since organizations have been the major part of the socio-cultural life of humans, they should be understood as arenas of social labor, social interaction and power struggle. The rationality of the American system of manufacture simply puts emphasis on the efficiency of the system or ensuring the efficient use of means of production and determining what policies and strategies to pursue—productivity and managerial effectiveness. Other social concerns such as corporate culture, subcultures, individual and group goals, interests, values and norms, collaboration, mutual understanding, learning, conflict, achievement and exercise of authority, power asymmetry, and contradiction are, however, greatly ignored.

Taylorist approach simplifies and fragments production process in which each routine task becomes transparent to the manager and the worker. The deskilling of the production work is materialized through defining what was required, dividing the task up into smallest and most routine components, identifying the appropriate person to undertake the task, and devising an appropriate set of incentives. This leads to easy control and performance measurement for managers.

Likewise, Sloanist organizational structure puts emphasis on simplifying decision making, coordinating without losing control, separating operational and strategic issues, penetrating the markets, reducing the time needed to get new products to market, responding faster to customers needs, and securing the economies of scope principle. Such an organizational structure enables an organization to increase productivity and profitability through an efficient structural design. Furthermore, Fordist organizational technology that is based on assembly line and mass production stresses the economies of scale principle—cost savings that result when goods and services are produced in large volume on automated production lines (Jones, 2001).

The overall purpose within the three dimensions of the American system of manufactures is to achieve ‘optimisation’ or to increase productivity and managerial effectiveness. In a rational sense, Taylorist work process, Sloanist organizational structure, and Fordist organizational technology promote rationalization in the domain of ‘instrumental action’ concerned with developing control over the forces of production and rationalization in

the domain of 'strategic action' concerned with promoting control over steering capacities.

## **5. Conclusion**

In this paper we started from an analysis of three dimensions of the American system of manufactures—Taylorist, Sloanist, and Fordist, uncovered their limitations and diffusion. The overall purpose was to understand the chief characteristics of the American system of manufactures, which we hoped to give a direction to the analysis of its entrenched rationality.

We also dealt with a brief analysis of sociological paradigms in order to pinpoint the exact intellectual position of the American system of manufactures, which was based on the conventional functionalist rationality. The overall purpose was to uncover the nature of the intellectual attribute of the American model.

Then we revealed the rational inadequacy of the American system of manufactures that gave rise to inappropriate employment of methods, tools, and techniques in dealing with complex and multifarious organizational problems.

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**Figure 1: Burrell and Morgan's Four Paradigms for the Analysis of Social Theory (Jackson, 2000).**

